

SELF HEAT CLOTHING AND BLANKETS

Field of the Invention

This invention relates to the field of clothing with self-heat temperature rise or warming characteristics when exposed to oxygen after removal from an airtight storage pack, such as a survivor's kit, and put on a person's body, intended particularly for use in emergency situations when a person becomes stranded or trapped in a cold environment in which the person might otherwise freeze or suffer other adverse health consequences. The invention also relates to blankets having the same self-heat characteristics.

Background of the Invention

Prior to this invention, strips of fabric having self-heating characteristics have been available, such as the strips of fabric manufactured by Proctor & Gamble, Cincinnati, Ohio which they refer to as "air activated Heat Wraps." Such fabric strips can be purchased of various lengths, and while those of an appropriate length can be wrapped around a person's arm or waist, they are not available in the form of an article of clothing that will stay held in place when a person has put it on. It may be necessary to have the heat enhanced fabric item in place for an extended period of time which is possible when incorporated as an item of clothing, whereas a length of fabric merely wrapped around a person's arm or waist can become easily dislodged. In emergency situations, the person may lapse into unconsciousness after putting on the item of clothing having the self-heat characteristics incorporated therein. In such case, whereas the item of clothing will remain in place while being worn, a length of fabric wrapped around a person's arm or waist is likely to fall away in which the unconscious person might die or suffer irreparable injury from exposure to the cold.

From a structural standpoint and for purposes of describing this invention, an article of clothing has one or more portions in which the material completely surrounds one or more body portions such as an arm, a leg, the person's chest, the top portion of a person's head in the case of a cap, and other portions of a person's body, with a continuously joined wall of such material, whereby the only way such article of clothing can be removed is by withdrawing the surrounded body part out therefrom. By contrast, the prior art lengths of fabric which can be wrapped around a person's arm, or leg, or other body part have a completely different structure, including a continuous length of material terminating in a first end at one edge and in a second end at the opposite edge which ends are not structurally joined together whereby the wrap can fall away if not continuously held in place by the user or by an adhesive or other separate means.

The prior art lengths of self-heat fabric as well as the self-heat fabric formed as articles of clothing in accordance with this invention both make use of the known fact that certain chemicals and chemical compounds, including iron, charcoal, and sodium chloride generate heat when exposed to oxygen. Those materials plus water are combined into flat disks which are then inserted between folds of loose woven fabric material such as cotton. As long as the fabric strips or items of clothing having such disks are folded up and contained in a sealed bag or other air tight container that prevents air and its oxygen from reaching the fabric and discs therein, the disks in the fabric do not generate heat. However, when such fabric strips or items of clothing are removed from the air tight enclosure and either wrapped around a portion of a person's body or in the case of such clothing put on for the person to wear, the disks within the loose woven fabric become exposed to the oxygen in the air and begin to heat up. Items of clothing having such disks

in place should not be worn indefinitely, but can be worn for up to eight hours with minimum if any risk. In any event, items of self-heat clothing in accordance with this invention are not intended for normal everyday wear, but for use in emergency situations where a person needs to be kept warm for the hopefully brief and temporary time until rescued.

Other prior art known to the inventor include the anti-hypothermia garment and device disclosed in published United States Patent Application No. 20030041364, the anti-osteoarthritis and anti-hypothermia garments and devices disclosed in published United States Applications No. 20030074709, also No. 20030079268, and No. 20030079269 which are readily available to the public and anyone having an interest in examining such published application.

Summary of the Invention

This invention comprises articles of clothing that have a built-in self-heat means, comprising a plurality of relatively thin flat disks interleaved between folds of a loose weave fabric such as cotton, such disks being made of materials which in combination generate heat when exposed to oxygen in the air. Such materials in a preferred embodiment of this invention include iron, charcoal, sodium chloride mixed together with water, allowed to partially harden or set, and formed into flat thin disks having an area dimension of about one square inch. Such flat thin disks are interleaved between folds of a loose weave fabric such as cotton and held in place therein in closely spaced apart relationship, the fabric being formed into an article of clothing such as a sweater that can be worn by a user to cover such body portions as the chest and back, as well as the person's arms, or any different article of clothing such as a cap for the person's head,

or a pair of pants and the like. By forming the self-heat fabric with self-heat disks into articles of clothing a person can put on and wear, the self-heat fabric portions are thereby held in place over the desired portions of the person's body even if the person falls asleep or becomes unconscious.

The article of clothing with the interleaved self-heat disks is initially folded and placed in an airtight package or bag to prevent exposure of the self-heat disks to oxygen in the air. The package with the self-heat article of clothing inside is carried by the person or in his vehicle for use in case of an emergency, such as fall, or becoming lost while on a hike, or a car wreck, or a situation wherein traffic is stalled for a long period of time, and the person is exposed to cold or freezing temperatures. When that happens, the article or articles of clothing are removed from the airtight package and put on by the person, whereby the clothing and disks interleaved therein become exposed to the oxygen in the air. Such exposure of the disks as described to oxygen causes a chemical reaction that causes their temperature to begin the rise, thus warming the clothing and the wearer's body portions covered by such article of clothing. The article of clothing as described will maintain such heat and warmth for an extended period of time, up to eight hours or more. When the person is finally rescued, the article of clothing with such self-heat disks therein is removed from the person and may be placed back in the airtight package to re-cool when no longer exposed to oxygen.

From a structural standpoint and for purposes of describing this invention, the structure of an article of clothing is completely different from the structure of a length of fabric material in the form of a wrap insofar as the important function of holding in place is concerned. An article of clothing has one or more portions in which the material

completely surrounds one or more body portions such as an arm, a leg, the person's chest, the top portion of a person's head, and/or other portions of a person's body, with a continuously joined wall of such material, whereby the only way such article of clothing can be removed is by withdrawing the surrounded body part out from such continuously joined wall. By contrast, the prior art lengths of fabric which can be wrapped around a person's arm, or leg, or other body part have a completely different structure, including a continuous length of material terminating in a first end at one edge and in a second end at the opposite edge. The ends are not structurally joined together whereby the wrap can fall away if not continuously held in place by the person himself who is using such wrap, or by a separate item such as adhesive, a tie or other separate fastening means which may not be readily available in an emergency situation for which the self-heat articles of clothing in accordance with the present invention are intended.

Brief Description of the Drawing

Fig. 1 is an elevation view of a self-heat article of clothing in accordance with this invention in which the outline of self-heat disks can be seen held in place between inner and outer layers of fabric material which make up the article of clothing.

Fig. 2 is an enlarged view of a section of the inner and outer layers of fabric material having self-heat disks in accordance with this invention held in place therebetween.

Fig. 3 is a side elevation view of an airtight enclosure in which the self-heat articles of clothing and self-heat blankets in accordance with this invention are kept when not in use for the purpose of generating heat to provide warmth for users thereof, such

enclosure preventing exposure of the self-heat disks to oxygen in the air thereby preventing the chemical reaction which results in the heat generating rise in temperature.

Fig. 4 is a plan view of a self-heat blanket in accordance with this invention in which the outline of self-heat disks can be seen held in place between inner and outer layers of fabric material which make up the blanket, a portion of the outer layer shown lifted up near the lower edge to show the inner layer of fabric material.

Description of Preferred Embodiment

An article of clothing 2 in accordance with this invention has a self-heat generating system comprising a plurality of self-heat disks 4 having chemical components that in combination, create a chemical reaction when exposed to oxygen that includes a rise in temperature. The self-heat disks 4 in a preferred embodiment of the invention include a combination of charcoal, iron, sodium chloride or table salt which are mixed together in water, then allowed to dry enough to be cut into relatively small disks 4 having an area dimension of about one square inch each, and allowed to dry further until relatively solid and firm. The self-heat disks 4 are then inserted between folds 6 and 8 of loose knit fabric 10 such as cotton, that have been cut, sewn and otherwise fashioned to form an article of clothing 2 when the folds 6 and 8 are sewn or bonded together. The folds 6 and 8 are sewn or bonded together tightly enough to hold the self-heat disks 4 in their closely spaced apart relationship when the article of clothing 2 is completed.

The fabric 10 is preferably loose knit or loosely woven to readily enable air to pass into and through the folds 6 and 8 for oxygen in the air to contact the self-heat disks

4 between those folds and thus cause their temperature to rise. Loose knit or loosely woven materials other than cotton may be used in accordance with this invention.

When a self-heat article of clothing 2 is made in accordance with this invention for use in cases of emergency to keep a person warm until help arrives, the article of clothing 2 is placed in an air-tight enclosure 12 which when sealed shut prevents air and oxygen from contacting the self-heat disks 4 in the clothing 2 inside the air-tight enclosure 12. The enclosure 12 with the self-heat article or articles of clothing 2 therein is carried with a person while traveling in a car, while on a hiking or horse-back trip, and the like where there is some risk of an emergency occurring that may expose a person to cold temperatures for an extended period of time. In the event of such emergency, the airtight enclosure 12 is opened and the article or articles of self-heat clothing 2 are removed and put on the person for wearing until rescued. As soon as the self-heat articles of clothing are removed from the air-tight enclosure 12 the self-heat disks 4 are exposed to the air and to the oxygen in the air, whereupon they begin to undergo the chemical reaction that results in the rise in temperature. The optimum temperature rise will be reached in about a half hour.

Such self-heat articles of clothing 2 having the self-heat disks 4 as described herein should not be worn for regular use but only for emergency use as intended, and even then, preferably not longer than eight hours. It would be wise and preferable to discuss possible emergency use of the self-heat articles of clothing 2 with a person's physician before any such emergency and need for such self-heat articles of clothing 2 arise. A physician may decide that for certain of his patients, their physical condition and

health is such that their use of such self-heat articles of clothing 2 should be limited or restricted for particular health reasons unique to such patients.

Another embodiment of the invention comprises a blanket 14 to be laid over a person or persons as opposed to a length of material to be wrapped around a portion of a person's body. The blanket includes an upper layer of fabric material 16 and a lower layer of fabric material 18. A plurality of self-heat disks 4 as described herein above are held in closely spaced apart relationship between the layers of fabric material 16 and 18 by sewing or bonding the layers together. When not in use as a blanket to cover and warm persons sleeping thereunder, the blanket 14 is placed back in its original airtight enclosure 20 and sealed therein against air and the oxygen in the air. When the self-heat disks 4 in the blanket 14 are exposed to air and the oxygen in the air, they begin to self-heat as described herein above thereby warming the blanket and those covered by the blanket. When the blanket is placed back and sealed inside the air-tight enclosure 20, the disks 4 are no longer exposed to oxygen and the heat generating chemical reaction of the materials from which the disks 4 are made no longer takes place.